

means for finding a potential match of a round corner region by extracting an oblique line which commences from a terminal of a line found by the line extracting means, and finding a potential match of the round corner region based on the oblique line;

means for extracting a cell finding cells containing the potential match of the round corner found by the potential match of the round corner region finding means; and

means for deciding a round corner part deciding a round corner based on the cells found by the cell extracting means, wherein the means for finding the potential match of the round corner region extracts the oblique element by extracting a first oblique element starting from a terminal of a longitudinal line, and a second oblique element commencing from a terminal of a lateral line within the lines found by the line extracting means; wherein the round cornered region is decided based upon the relationship of the two oblique lines.

3. (AS ONCE AMENDED) The table image processing device in claim 2, wherein the means finding a potential match of a round corner region decides, in a case that the first oblique element and the second oblique element overlap, the part as the potential match of the round corner.

AI  
COR 4. (AS ONCE AMENDED) The table image processing device in claim 2, wherein the means for finding a potential match of a round corner region decides the part as the potential match of the round corner region in a case that the first oblique element and the second oblique element are within a distance fixed in advance and there is a pattern showing a line feature between them, or contact or overlap each other.

5. (AS ONCE AMENDED) The table image processing device in claim 2, wherein the means for finding potential match of the round corner region decides the part as the potential match of the round corner region in a case that any another oblique element does not exist near an identified oblique element and there is a pattern showing a line feature at the terminal of the identified oblique line.

6. (AS ONCE AMENDED) A table image processing device comprising:  
means for inputting an image comprising sheet image including ruled lines;  
means for extracting a line by extracting a longitudinal line and a lateral line from the

input image;

means for finding a potential match of a round corner region by extracting an oblique line which commences from a terminal of a line found by the line extracting means, and finding a potential match of the round corner region based on the oblique line;

means for extracting a cell finding cells containing the potential match of the round corner found by the potential match of the round corner region finding means; and

means for deciding a round corner part deciding a round corner based on the cells found by the cell extracting means, wherein the means for deciding a round corner part decides the part as the round corner in a case that the pixel density at a corner of a cell extracted by the means for extracting the cell changes in a fixed order.

AI  
con't  
7. (AS ONCE AMENDED) The table image processing device in claim 2, wherein the means for deciding a round corner part decides, in the case that a round corner part decided based on the pixel density change exists, another corner of the input image is decided as a round corner.

8. (AS ONCE AMENDED) The table image processing device in claim 2, wherein the means for deciding a round corner decides, in case that a pattern of nth order function generated between the terminals of lines extracted by the means for extracting line matches the round corner part of the input image, the part as the round corner.

9. (AS ONCE AMENDED) The table image processing device in claim 6, further comprises:

means for finding regions recognizing character finding the character recognition region by neglecting the round corner part decided by the means for deciding round corner in the cells containing the round corner.

AD  
16. (AS ONCE AMENDED) A memory medium storing a program for implementing in a computer a table image processing device, wherein the program comprises:

means for inputting an image comprising a sheet image including ruled lines;

extracting lines of longitudinal line and lateral line within the input image;

finding a potential match of a round corner region by extracting an oblique line which

commences at a terminal of a line extracted by the process for extracting lines, and finding a potential match of a round corner region by fixed process using the extracted oblique line;

finding cells containing the potential match of the round corner region found by the process for finding the potential match of round corner region;

deciding a round corner part by fixed process for the corner of cells extracted by processing for extracting cell, wherein the finding a potential match comprising extracting the oblique element by extracting a first oblique element starting a terminal of a longitudinal line, and a second oblique element commencing from a terminal of a lateral line within the lines found by the extracting; wherein the round corner region is decided based upon the relationship of the two oblique lines.

AD  
COR' -

17. (AS ONCE AMENDED) A table image processing device comprising:  
means for processing finding a ruled line, wherein the means for processing finding the ruled line comprising:

means for extracting a line extracting longitudinal lines and lateral lines from an input image;

means for deciding region recognizing character deciding region recognizing character;

means for finding a ruled line by using the longitudinal lines and the lateral lines extracted from the means for extracting lines as the potential match of the ruled line and for deciding whether the potential match of the ruled line is a ruled line or not;

wherein the means for finding the ruled line finds whether the identified potential match of the ruled line is a ruled line or not based on roughness of the potential match of the ruled line and any one of thresholds of different plural thresholds corresponding to another image pattern extracted from the input image pattern existing around the identified potential match of the ruled line.

18. (AS ONCE AMENDED) The table image processing device in claim 17, wherein the means for finding a ruled line comprises:

a pixel density finding part finding whether the identified potential match of the ruled line is ruled line or not based on the roughness of the potential match of the ruled line by using a first threshold fixed in advance and a second threshold fixed in advance higher than the first threshold,

wherein the pixel density finding process part, corresponding to the pixel density of the image pattern existing around the identified potential match of the ruled line, uses the first threshold in a case that the pixel density of the image pattern other than the identified potential match of ruled line is high, and uses the second threshold in a case that the pixel density of the image pattern other than the identified potential match of ruled line is low.

19. (AS ONCE AMENDED) The table image processing device in claim 18 ,wherein the means for finding ruled line comprising:

when the potential match of the ruled line is a longitudinal line, an image pattern of same length as the potential match of the ruled line existing right and left side of the potential match of the ruled line within a fixed range is used as the image pattern existing around the potential match of the ruled line,

when the potential match of the ruled line is a lateral line, an image pattern of same length as the potential match of the ruled line existing up and under of the potential match of the ruled line within in a fixed range is used as the image pattern existing around the identified potential match of the ruled line.

AD  
CON 1  
20. (AS ONCE AMENDED) The table image processing device in claim 17, wherein the means for finding ruled line comprising ruled line width finding means finding whether the potential match of the ruled line is ruled line or not base on the roughness found by the first threshold fixed in advance or the second threshold fixed in advance higher than the first threshold;

wherein the ruled line width finding means, corresponding to the width of the image pattern existing around the identified potential match of the ruled line, uses the first threshold in a case that the width of the image pattern is wide, and uses the second threshold in a case that the width of the image pattern is narrow.

21. (AS ONCE AMENDED) The table image processing device in claim 20, wherein the ruled line width finding means uses the potential match of the ruled line extending to same direction as the identified potential match of ruled line and adjacent or connected to the identified potential match of ruled line as the image pattern existing around the identified potential match of ruled line.

22. (AS ONCE AMENDED) The table image processing device in claim 20, wherein the ruled line width finding means decides that the width of the potential match of the ruled line is wide in a case that the width of potential match of ruled line is greater than the  $n$  times of the width of the image pattern existing around the identified potential match of ruled line, and the width of the potential match of the ruled line is narrow in a case that the width of potential match of ruled line is less than the  $1/n$  times of the width of the image pattern existing around the identified potential match of ruled line.

24. (AS ONCE AMENDED) A table image processing device comprising:  
means for inputting an image comprising a sheet image including ruled lines;  
means for extracting a line extracting longitudinal lines and lateral lines from the input image;  
means for finding the potential match of round corners by extracting an oblique line which commences from a terminal of a line found by the line extracting means, and finding a potential match of the round corner region based on the oblique line;  
means for extracting a cell finding cells containing the potential match of the round corner found by the potential match of the round corner region finding means;  
means for deciding round corners by processing deciding a round corner for corner of cells extracted by the means for extracting cells;  
means for deciding region recognizing character deciding region recognizing character finding the character recognition region by neglecting the round corner part decided by the means for deciding the round corner in the cells containing round corner;  
wherein:  
the means for finding the ruled line deciding whether an identified potential match of the ruled line of a longitudinal line or a lateral line is a ruled line or not; and  
the means for finding ruled line finds whether the identified potential match of the ruled line is a ruled line or not based on roughness of the potential match of the ruled line and any one of the thresholds of different plural thresholds corresponding to another image pattern extracted from the input image pattern existing around the identified potential match of the ruled line;  
the means for finding potential match of the round corner region extracts the oblique

element by using a line found by the means for finding ruled lines; and  
the means for extracting a cell finds cells based on the result found by the means for finding ruled lines.

25. (AS ONCE AMENDED) A memory medium storing program for implementing in a computer of a table image processing device, wherein the program comprises:

extracting a line to extract longitudinal lines and lateral lines from an input image;  
extracting cells by using the longitudinal line and the lateral line;  
deciding region recognizing character deciding region recognizing character; and  
by using the longitudinal lines and the lateral lines extracted from the extracted lines as the potential match of the ruled line, deciding whether the potential match of the ruled line is a ruled line or not;

wherein it is found whether the identified potential match of ruled line is a ruled line or not based on roughness of the identified potential match of the ruled line by using any one of threshold of different plural thresholds corresponding to another image pattern extracted from the input image pattern existing around the identified potential match of the ruled line.

AB  
CON'S

26. (AS ONCE AMENDED) A table image processing method using means for inputting image for inputting a sheet image including ruled lines; means for extracting a line extracting the longitudinal line and lateral line from an input image; means for finding a potential match of a round corner region by extracting an oblique line which commences from a terminal of a line found by the line extracting means; and finding a potential match of the round corner region based on the oblique line; means for a extracting cell finding cells containing the potential match of the round corner found by the potential match of the round corner region finding means and means for deciding a round corner part deciding a round corner based on the cells found by the cell extracting means comprising:

extracting a longitudinal line and lateral line out of an input image;  
extracting an oblique line which commences from a terminal of a line found by the line extracting process, and finding a potential match of a round corner region based on the oblique line;

wherein from the potential match of the round corner region, extracting the oblique element by extracting a first oblique element starting a terminal of a longitudinal line, and a second oblique element commencing from a terminal of a lateral line within the lines found by the line extracting means, and

the round corner region is decided with the relation of the two oblique lines.

AB  
CON: 27. (AS ONCE AMENDED) A table image processing method for finding a ruled line by using means for extracting a line extracting longitudinal lines and lateral lines from an input image; means for extracting cells by using the longitudinal line and the lateral line; means for deciding region recognizing character deciding region recognizing character, said method comprising:

finding whether an identified potential match of the ruled line is a ruled line or not based on a roughness of the potential match of the ruled line and one of a threshold of different plural thresholds corresponding to another image pattern extracted from the input image pattern and existing around the identified potential match of the ruled line.

29. (AS ONCE AMENDED) A table image processing device comprising:  
a unit inputting an image comprising a sheet image including ruled lines;  
a unit extracting a line extracting the longitudinal line and lateral line from an input image;

all a unit finding a potential match of a round corner region by extracting an oblique line which commences from a terminal of a line found by the line extracting unit, and finding a potential match of the round corner region based on the oblique line;

a unit extracting a cell finding cells containing the potential match of the round corner found by the potential match of the round corner region finding unit; and

a unit deciding a round corner part deciding a round corner based on the cells found by the cell extracting unit, wherein the unit finding the potential match of the round corner region extracts the oblique element by extracting a first oblique element starting a terminal of a longitudinal line, and a second oblique element commencing from a terminal of a lateral line within the lines found by the line extracting unit, wherein the round corner region is decided based upon the relationship between the two oblique lines.

30. (AS ONCE AMENDED) The table image processing device in claim 29, wherein the unit finding a potential match of a round corner region decides, in a case that the first oblique element and the second oblique element overlap, the part as the potential match of the round corner.

31. (AS ONCE AMENDED) The table image processing device in claim 29, wherein the unit for finding a potential match of a round corner region decides the part as the potential match of the round corner region in a case that the first oblique element and the second oblique element are within a distance fixed in advance and there is a pattern showing a line feature between them, or contact or overlap each other.

32. (AS ONCE AMENDED) The table image processing device in claim 29, wherein the unit for finding potential match of the round corner region decides the part as the potential match of the round corner region in a case that any another oblique element does not exist near an identified oblique element and there is a pattern showing a line feature at the terminal of the identified oblique line.

ACI  
con →

33. (AS ONCE AMENDED) A table image processing device comprising:  
a unit inputting an image comprising a sheet image including ruled lines;  
a unit extracting a line extracting the longitudinal line and lateral line from an input image;  
a unit finding a potential match of a round corner region extracting an oblique line which commences from a terminal of a line found by the line extracting unit, and finding a potential match of the round corner region based on the oblique line;  
a unit extracting a cell finding cells containing the potential match of the round corner found by the potential match of the round corner region finding unit; and  
a unit deciding a round corner part deciding a round corner based on the cells found by the cell extracting unit, wherein the unit for round corner part decides the part as the round corner in a case that the pixel density at a corner of a cell extracted by the unit extracting the cell changes in a fixed order.

34. (AS ONCE AMENDED) The table image processing device in claim 29, wherein



the unit for deciding a round corner part decides, in the case that a round corner part decided based on the pixel density change exists, another corner of the input image is decided as a round corner.

24  
con-  
35. (AS ONCE AMENDED) The table image processing device in claim 29, wherein the unit deciding a round corner decides, in case that a pattern of nth order function generated between the terminals of lines extracted by the unit for extracting line matches the round corner part of the input image, the part as the round corner.

36. (AS ONCE AMENDED) The table image processing device in claim 29, further comprising:

a unit finding regions recognizing character finding the character recognition region by neglecting the round corner part decided by the unit deciding round corner in the cells containing the round corner.

Please ADD the following claims:

25  
37. (AS NEW) A memory medium storing a program for implementing in a computer a table image processing device, said program when executed by the computer causes the computer to execute the functions comprising:

extracting a line by extracting a longitudinal line and a lateral line within an input image;  
finding a potential match of a round corner region by extracting an oblique line which commences from a terminal of a line found by the line extracting means, and finding a potential match of the round corner region by a fixed process using the oblique line;

finding cells containing the potential match of the round corner found by the process for finding the potential match of the round corner region; and

deciding a round corner part by a fixed process for the corner of the cells extracted by processing for extracting the cell, wherein the round corner part decided, in a case that the pixel density at a corner of a cell extracted by the extracting the cell changes in a fixed order, the part as the potential match of the round corner.